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obliterating the structure of the original notochordal cells, until finally the notochord consists of a series of clear spaces separated by hyaline partitions. These vacuoles are traceable also in tunicates, and in the teleosts or bony fishes.

In conclusion, we have to say that Hatschek has given to the world a most valuable addition to its stock of embryological knowledge.

TROUESSART'S CATALOGUE OF RECENT AND FOSSIL MAMMALS.<sup>1</sup>—Catalogues of animal forms are as necessary to a student of zoölogy as are catalogues of books to the frequenters of a library, or directories to dwellers in cities. No zoölogist can carry in his brain, ready at an instant's notice, the accepted name, synonymy, etc., of all the species included in the department he specially studies, and thus such works as Gray's Hand-List of Birds, and the present are great boons to him; they save him hard work, and leave him free to exercise his mind upon purely scientific work.

Dr. Trouessart's catalogue, which has already progressed to the completion of the Primates and Rodentia promises to be to mammalogists what Gray's Hand-List is to ornithologists, with the added recommendation that it contains also all known species of fossil mammals, and will therefore prove equally useful to the palæontologist.

The classification adopted is to a great extent that of modern authors with the addition of the orders proposed by Professor Cope, and is based upon the structure of the feet and teeth, except in the division of all mammalia into the universally accepted sub-classes Monodelphia (placental) and Didelphia (non-placental).

The Prosimiæ (Lemurs) are separated as an order from the Simiæ; Cope's order Bunotheria, with four extinct sub-orders (*Mesodonta*, *Creodonta*, *Tillodonta*, *Tæniodonta*), and one recent sub-order (Insectivora), is placed among the *Secundates*, or unguliculates; the Toxodonta are considered a sub-order of Rodentia, and the Zeuglodontia has the same rank among the Pinnipedia. The line of hoofed animals or *Ternates* is concluded by the *Amblypoda*, with two sub-orders, *Dinocerata* and *Pantodonta*; the porcine group is separated as a sub-order from the ruminants, and the order Sirenia is intercalated between the Edentata and the Cetacea. The last mentioned three orders form the group *Homodonta*, of equal rank with the Heterodonta, which includes the remaining monodelphian orders.

The catalogue gives, besides genera, sub-genera, and species, the habitat, the synonymy, and all varieties on which species have been founded. When these varieties are merely local, or perhaps based on individual characters, they are marked with the

<sup>1</sup> *Catalogue des Mammifères Vivants et Fossiles*. Par le DR. E. L. TROUESSART. June, 1878.

letters a, b, c, etc., but these letters are doubled when the varieties have the weight of races or geographical species, while fossil species and genera are marked by the sign †.

There are points in the classification adopted that may reasonably be objected to. The most important of these is the creation of the group *Homodonta* to include the sirenians, whales and edentates, orders not closely allied, and differing much in the structure of the teeth.

The terms *Secundates* and *Ternates* are new, and are no improvement upon the older terms Unguiculata and Ungulata, the last of which should be understood to comprehend four orders, viz., *Proboscidea*, *Artiodactyla*, *Perissodactyla*, and *Amblypoda*. It is not possible to discover anatomical characters of sufficient importance to warrant the separation of the Bimana from the Simiæ, and it is probable that the Prosimiæ should be placed in the bunotherian series of sub-orders. This last probability is hinted at in the prospectus.

BETTANY'S PRACTICAL BOTANY.<sup>1</sup>—This useful little book should have been called *First Lessons in the Practical Botany of the Flowering Plants*, as it does not even mention the non-flowering plants. In the words of its author "its aim is to aid students in schools and colleges in the practical work of describing flowering plants." Some excellent suggestions are given under "How to Describe Plants." The "Cautions," too, are to the point. Under the successive topics, (1) Root system, (2) Stem and branch system, (3) Leaf system, (4) Inflorescence and floral receptacle, (5) Floral envelopes, (6) Stamens, (7) Pistil and ovules, (8) Fruit and seeds, short definitions and practical directions for the study of specimens are given, which if followed step by step will enable the pupil to observe accurately, and to record what he has seen in proper order and in plain language. Special directions are given in a later chapter for the study of the plants of the principal natural orders, which will doubtless prove useful to the student.

While we do not think it profitable to begin the study of botany with such complex organisms as the flowering plants, we nevertheless welcome this little volume because it can do good service in directing pupils to study *plants* rather than books on plants. The "laboratory method" is so fully carried out that the book can scarcely be studied by itself; the pupil *must* study the plant.—*C. E. B.*

BALFOUR'S COMPARATIVE EMBRYOLOGY (SECOND NOTICE).—The chapter on the development of the birds is quite long, and the embryology of the chick has been more thoroughly studied than that of any other animal. In the brief chapter on reptiles, the de-

<sup>1</sup> First Lessons in Practical Botany, by G. T. Bettany, M.A., B.Sc., F.L.S. Macmillan & Co., London and New York, 18mo, 104 pp.